



**SASPRO**

# **WHITEPAPER**

## **AFFORDABLE OFF-THE-GRID SOLAR POWER**

### **FOR HOME OWNERS AND SMALL AND MEDIUM ENTERPRISES**

@ saspro 2019

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# 1. EXECUTIVE SUMMARY

## FROM VISION TO MISSION

### Background to electricity supply in South Africa

Prior to the establishment of Eskom, the provision of electricity was dominated by municipalities and private companies. The city of Kimberley was one of the first users of public electricity when it installed electric streetlights in 1882 to reduce crime at night. This was followed by Cape Town in 1895 with the construction of the Graaff Electric Lighting Works to power 775 street lights.

Eskom was founded by the Electricity Act of 1922. One of Eskom's first power plants was a coal-fired 128 MW station in Witbank, completed in 1935, to provide power to the mining industry. The plant was build and run in partnership with the privately owned Victoria Falls and Transvaal Power Company which owned a number of other power plants across the country. Thanks to state support Eskom was able to buy out the Victoria Falls and Transvaal Power Company.

From 1960 to 1990 Eskom increased its installed power production capacity from 4,000 MW to 40,000 MW so as to keep up with rapid economic growth in the 1960s and 70s. During the same period Eskom established a nationwide 400 KV power distribution network. During this period the company build a number of large standardized coal-fired power plants. These plants were known colloquially as "six-packs" for the 6 large generator units they were designed to accommodate. In 1974 the company was instructed to start work on Koeberg nuclear power station to both provide power to Cape Town and help facilitate the South African government's nuclear program.

During the 1970s the company controversially sought to increase electricity tariffs to help pay for its large expansion plans. Due to its financial situation a commission was appointed to solve the issues and it recommended a number of financial and organizational changes for the company to adopt. This led to the company abandoning its non-profit objective and to raise



funds by taking out international loans. The number of Eskom employees was also reduced from 66,000 to 60,000 in the late-1980s.

Following democratic elections in 1994 the company changed focus to electrification of previously neglected residential areas and to provide low cost electricity for economic growth. Following the passing of the 1998 Eskom Amendment Act, government's powers to influence company policy and investment decisions were greatly expanded. Due to the South African government's attempted privatization of Eskom in the late 1990s during the administration of President Thabo Mbeki, Eskom's requests for budget to build new stations were denied. After leaving the presidency Mbeki would later state in December 2007 that this was an error resulting in serious adverse effects for the South African economy.

In January 2008 Eskom introduced "load shedding", a system of planned rolling blackouts based on a rotating schedule, in periods where short supply threatens the integrity of the grid. Demand-side management has focused on encouraging consumers to conserve power during peak periods in order to reduce the incidence of load shedding. Actual load shedding started already as early as in the latter months of 2007 when South Africans started experiencing widespread rolling blackouts as supply fell behind demand, threatening to destabilize the national grid. With a reserve margin estimated at 8% or below, such "load shedding" is implemented whenever generating units are taken offline for maintenance, repairs or re-fueling (in the case of nuclear units).

Since its implementation in 2008 load-shedding has become part of everyday life in South Africa with devastating effects for the economy, especially small and medium enterprises. The inconvenience caused to the average citizen has escalated to a stage where outright disgust and a desperation to implement sources of alternative energy is at extreme levels. However, with the average cost of a home solar system at +R230,000.00, more than 90% of average households are simply unable to afford the cost of a solar system for domestic or SMME businesses. The fact that municipal indebtedness to ESKOM is now approaching R30 Billion clearly demonstrates that consumers already find the cost of electricity simply unaffordable. The stability, affordability and continued supply of electricity to the +12,9 million formal homes



in South Africa has reached a critical stage both in terms of continued supply and affordability. This is of deep concern to every South African.

The financial viability of ESKOM has deteriorated to critical levels, mainly through maladministration, wholesale looting, fraud, corruption and inept management over the past decade. It has left Eskom in tatters both financially and from a management perspective and its international credit rating is at junk status since 2016. Its business model is no longer viable but, due to political considerations as well as lack of appropriate business acumen, both Government and management appears to be unable to invent a viable business model. The current South African government lack the necessary funds/planning to restore the sole supplier of electricity in South Africa to financial health and the only current plan is to transfer the financial burden associated with its survival to consumers, both individual and business.

This situation is not going to improve in any way whatsoever, over the next decade. The cost of electricity has escalated since 2007 by just over 500%, of which more than 150% happened just in the past 4 years. It is expected to double again over the next 4 years taking the cost of electricity to levels where it will be beyond the reach of most consumers as well as small and medium enterprises. The government simply has no plan other than to continue in its blatant arrogance by simply passing the burden onto the consumers most of whom are already vulnerable and exposed. We confidently predict that the damage caused to Eskom by the rampant maladministration, looting, fraud and corruption over the past decade will not be repaired in the course of the next decade even at the projected rate increases. The announced restructuring of Eskom generation, distribution and transmission, will take at least a decade to have any noticeable impact on its performance. ESKOM's current debt of ZAR 400 billion is wholly unmanageable and the S.A. government clearly doesn't have the money to rescue the company. It is also seriously doubtful that the government has the political will or the resolve to force the company to take effective steps to reduce its bloated workforce through retrenchments due to the political consequences. With the more than generous salary and wage packages, a policy of not replacing any employees that leave the company's employ will certainly not have any noticeable effect on its bloated workforce as there is no incentive for employees to leave. For them there is no greener grass on the other side of the fence.



## 2. THE MARKET

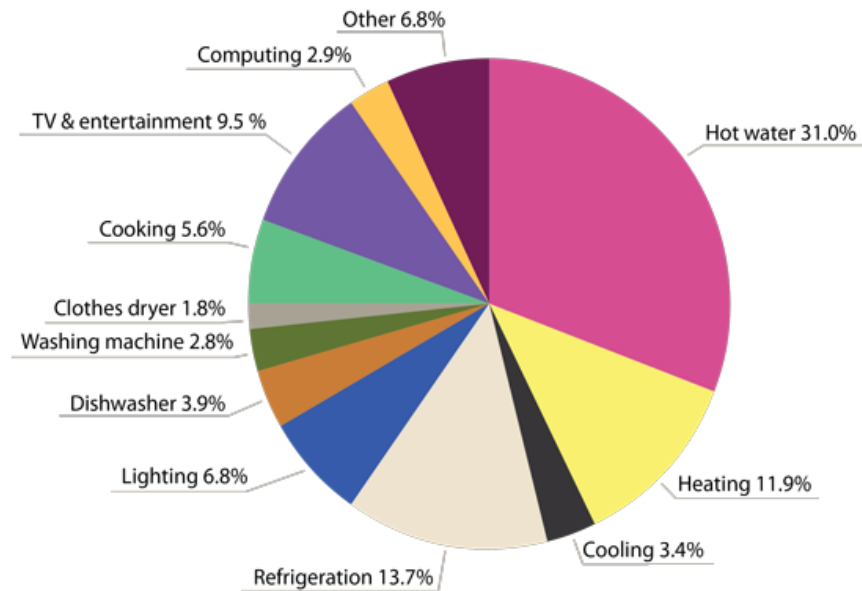
### THE DEMAND FOR ALTERNATIVE SUPPLY

#### 1. RENEWABLE ENERGY SUPPLY IN SOUTH AFRICA

According to the latest available statistics there are 12,9 million formal residential dwellings in South Africa. The current supply capacity of Eskom is 34,952 MWP of which 1,743 MWP is sourced from solar farms connected to the grid. The current average municipal charge for electricity is R2.209 per KWH. The average household usage varies between 230kwh and 340kwh per month. This figure is however distorted by the much lower consumption of the typical RDP household and rural informal settlements. The average urban and suburban household consumption is, ignoring the much lower rural/informal sector, between 800 KWH and 1,100 KWH per month. This calculates in the average household's monthly electricity bill being between R1,630.00 and R2,650.00 per month. The chart below provides insight into the average middleclass family's electricity consumption. It is estimated that Eskom will increase its charge on average by between 12,5% and 15% per annum for the next 5 years and thereafter at 10,5% per annum although these figures are largely disputed by experts who predict much higher increases if the power utility wishes to remain operational. Assuming however that Eskom's electricity charges will increase as estimated, then the electricity bill for the average middleclass family consuming an average of 800KWH per month will be R5,934.40 per month in 2028 against the current R1,767.20.



Average annual electricity consumption



### IS RENEWABLE ENERGY A SOLUTION TO ESKOM'S WOES?

Eskom entered into agreements with 27 Solar Power producers that will feed the solar power they generate into the Eskom grid. There is huge opposition from trade unions to Eskom's decision to enter into these agreements and it can be expected that the labor unions will not abandon their fierce opposition in the foreseeable future. What is however important to understand is that allowing independent renewable energy producers to sell electricity to Eskom and to connect to the distribution network is not going to have any major impact on the provision or availability of electricity in South Africa since the program is merely aimed at replacing power supply from ageing coal fired power stations which Eskom intends to decommission as and when renewable energy comes online. This might at best have a minimal impact on Eskom's maintenance costs and then only from 2030 onwards.



## WHERE DOES THIS LEAVE THE CONSUMER?

Large scale renewable energy generation is not going to benefit the consumer in any meaningful way whatsoever. For as long as Eskom owns and controls the electricity distribution network in South Africa, consumers will have no choice but to depend on Eskom for their electricity supply, alternatively find ways to generate their own electricity. For the next 2 to 3 decades at least, electricity supply in South Africa will be a monopoly controlled by Eskom.

## What is the alternative?

The only alternative the consumer is left with is to generate his/her own electricity by installing a home solar system at his/her place of residence. There are at present many retailers from whom the consumer can buy systems that will either supplement their municipal electricity supply or take them off the municipal/Eskom grid altogether. However, take-off of these systems, specifically “off the grid” systems have been disappointingly slow mainly because of the inhibitive upfront costs involved.

## **Enter South African Solar Project SASPRO.**

### THE HOME OWNER

The SOUTH AFRICAN SOLAR PROJECT (SASPRO) was established in November 2018 with the objective to provide home-based solar electricity supply affordable and available for every South African household. By making solar systems available to home owners and SMME’s, they will now be able to acquire a complete solar system for his home or small business without any upfront cost and to lock his electricity costs in at current rates for the next twelve (12) years where after he/she will take full ownership of the system and no longer have to pay for electricity whatsoever.

**Estimated Eskom/Municipal cost per KWH projected for the next 10 years.**

Current	R2,209
2019	R2,485
2020	R2,796
2021	R3,145
2022	R3,538
2023	R4,423
2024	R4,865
2025	R5,352
2026	R5,887
2027	R6,476
2028	R7,123
2029	R7,658

The above rates assume that Eskom will increase its rate per KWH by 12,5% for the next 5 years and thereafter at 10% per annum. Most analysts are adamant that Eskom will be compelled to implement much higher rate increases if it hopes to restore financial viability.





### **3 THE OPPORTUNITY – A SOLUTION FOR BOTH HOME OWNERS AND SMME’S**

**PROVIDING HOME OWNERS AND SMME’S WITH ELECTRICITY THAT IS**

- I) AFFORDABLE**
- II) ACCESSIBLE**
- III) STABLE**
- IV) SUSTAINABLE**
- V) FULLY TRANSPARENT**

Considering the following

- i) The current generation and supply problems of ESKOM as sole supplier of electricity
- ii) The increasing costs of electricity
- iii) The grave outlook for the future of ESKOM
- iv) The unavailability of affordable alternatives for the consumer
- v) The precarious financial position of the vast majority of households as well as small and medium size businesses in South Africa

It is abundantly clear that the market in South Africa for the provision of an alternative affordable, reliable and sustainable electricity supply, will most probably never be more ready.

South African Solar Project (SASPRO) operated and managed by Mpower Business Projects (Pty) Ltd. intends to revolutionize the domestic electricity supply in South Africa thus ensuring that supply of electricity to households and small and medium enterprises once again becomes:

- i) Affordable;
- ii) Accessible;
- iii) Stable;



- iv) Sustainable;
- v) Fully transparent.

Simultaneously, the SASPRO process will offer a unique and extremely lucrative investment opportunity for investors, both small and big. It will be the first project of its kind in Africa where a valuable commodity i.e. electricity, is tokenized. *(see Technology Section for an explanation of Tokenization)*

#### **How does it work?**

1. The client enters into an electricity supply agreement with SASPRO in terms of which SASPRO will install a complete home solar system of sufficient size to replace the client's current Municipal/ESKOM supply.
2. Automatic switchover to municipal electricity is provided in the event of a malfunction in the solar system.
3. SASPRO will sell the electricity so generated to the home owner at a fixed rate for the full term of the agreement which will be a period of 144 months (12 years).
4. The contract term is flexible and dependent on the client's personal circumstances.
5. The electricity rate will be based on the pre-determined and agreed upon capacity of the Solar System multiplied by the Municipal electricity rate per KWH as at the date the system is installed. This rate will be fixed for the full term of the agreement.
6. The client receives loyalty points each month on condition that that all terms and conditions in the supply agreement are complied with. Once the client has accumulated 10,000 loyalty points, he exchanges the loyalty points for ownership of the solar system installed at his home.
7. The number of loyalty points received per month is dependent on the term of the supply agreement. On the standard 12-year agreement the number of loyalty points will be 69,5 points per month.
8. The client may elect to pay a higher rate for the electricity supplied in which instance he/she will receive more loyalty points resulting in the term of the agreement being reduced pro rate.



### Advantages of the SASPRO system.

1. NO upfront capital outlay by the customer is required.
2. NO further increases in electricity costs ever again because the rate is fixed for the full term of the agreement.
3. On expiry of the agreement (the client has accumulated 10,000 loyalty points) ownership of the Solar installation is transferred to the client who then the owner of the solar installation in exchange for his/her loyalty points.
4. The Solar system installed will carry a full and comprehensive 20-year factory guarantee on ALL components excluding batteries which shall carry a 10-year guarantee.
5. 24-hour monitoring, maintenance and support of the system during the term of the agreement.
6. Maintenance and support contracts available after transfer of ownership to the customer.
7. The system is flexible, and the electricity generating capacity can be increased/decreased during the term of the agreement.
8. The system is managed by Smart Contracts. (for an explanation of “Smart Contracts” see Technology Section)

The most important aspect of the SASPRO alternative is the financial benefit in terms of saving on electricity cost for the consumer. Estimated savings based on year of installation of a SAPRO system generating 800KWH per month for just the next 12 years are as follows;

<b>Year of installation</b>	<b>Eskom charge</b>	<b>SASPRO</b>	<b>Saving</b>
2019	R377,879	R178,929	R198,950
2020	R416,064	R201,295	R214,769
2021	R454,270	R226,457	R227,813
2022	R494,397	R254,764	R239,633
2023	R535,354	R286,609	R248,745



Having saved an estimated amount of between R198,000 and R248,000 over the 12-year term of the agreement, the customer will, as of the 1<sup>st</sup> day of year 13, having then taken full ownership of the installed solar system, never have to pay for electricity again.

Considering that the systems to be installed carry a factory guarantee of 20 years at 100% of rated output and an additional 5 years at 95% of rated output, the consumer can look forward to a hassle-free supply of electricity for another 12 years, completely free of charge save and accept for the cost of a maintenance agreement estimated to then be at R350,00 per month.



## 4 OPPORTUNITY – AN INVESTORS PERSPECTIVE

- i) **A safe and secure investment opportunity**
- ii) **One of the most profitable passive investment opportunities available**
- iii) **Active investors stand to gain even more**

SASPRO offers one of the most lucrative investment opportunities currently available to investors globally, whether rich or poor, active or passive. From as little as \$10/ R140.00 (assuming an exchange rate of \$1 = R14) any investor is empowered to invest in the project. The investment carries a fixed 12% return on investment per annum with returns are paid quarterly. Should the investor choose to re-invest the interest then the effective interest rate will be 12,68%. The principal sum invested is repaid at a rate of 8,34% per annum on each and every anniversary of the investment. With the investment to be listed on at least 3 exchanges, the investor will be able to sell his/her investment as and when he/she so desires. Both interest and the principal are freely convertible into the currency of choice of the investor, both fiat and crypto.

### HIGHLIGHTS OF THE INVESTMENT OPPORTUNITY

- i) The investment program will be fully compliant with current legal and regulatory requirements and the South African legal framework.
- ii) Investments from as little as TEN US DOLLAR (approximately ONE HUNDRED and FORTY RAND) can be made.
- iii) Investment carries an interest of 12% per annum payable quarterly.
- iv) Principal invested will be redeemed at a rate of 8,34% per annum and commencing on the first anniversary of the investment and thereafter annually until fully redeemed.
- v) Investments will be recorded and managed on the SASPRO Blockchain and payments of both interest and capital redemption will be managed via Smart Contract.  
*(For an explanation of what the Blockchain and Smart Contracts are see Technology section)*



- vi) Investment Tokens will fully tradeable on the Exchanges it will be listed on. This will enable investors to take advantage of capital gains by redeeming their investments at any given point in time and in a choice of currencies both fiat and crypto.

#### TOTAL AMOUNT OF CAPITAL ANTICIPATED TO BE RAISED

- I) SASPRO anticipates to raise a total amount of \$21 million. This will be raised in 1 pre-launch phase and a further 4 phases over a 3-year period. Thereafter the project will be self-funding in terms of continued future capital expenditure on solar systems.
- II) The Token Offering will run on the Ethereum Network.
- III) Each SASPRO Token will be issued at a nominal value of \$1.
- IV) Tokens will initially be tradeable on one international Exchange. The Token will be listed on a further 2 Exchanges within the first year of operations.
- V) Twenty-one (21) million tokens will be pre-mined. Tokens will be distributed as follows;
  - a) 1,000,000 (One million) in pre-launch phase at a 20% discount
  - b) 3,000,000 (Three million) during phase1 at 5% discount commencing on date of official launch.
  - c) 5,000,000 (Five million) during phase 2
  - d) 7,000,000 (Seven million) during phase 3
  - e) 5,000,000 (Five million four hundred thousand) during phase 4
  - f) Tokens not sold on completion of phase 4 of the Token offering will be burned.



## HIGHLIGHTS OF THE FINANCIAL FORECAST.

	(15mths) Year 2020	Year 2023	Year 2030
	(In R-million)		
Investments raised	R15,5	R210,0	R210,0
Systems installed at cost	R17,2	R257,9	R518,9
Annual Turnover	R2,35	R46,79	R81,04
Annual interest charge	R0,528	R19,4	R6,08
Token buy-back program	R0,458	R14,2	R13,1
O/heads	R0,74	R3,41	R17,49

The above clearly indicates the viability of the project including its ability to meet investor expectations with regards to both interest and capital repayment

The passive investor can therefore sit back and relax knowing that the project is fully capable and able to meet its ROI expectations. In a global environment where negative interest rates/zero interest rates are becoming the norm in developed countries and economic growth is negligible in most developed and developing countries, the opportunity to invest in a project that returns 12% per annum with quarterly payment on interest, capital redemption on an annual basis and the ability to redeem your investment on the open market without the hassle and cost of any brokerage and other fees, is an opportunity that is rarely found. Backed by real-world income producing hard assets the risks are mitigated almost into non-existence.

For the active investor there exist the real possibility that the demand for the investment created by the real-world application of the project in a commodity that is a necessity for almost every household/business and an ever-increasing demand, capital appreciation is almost guaranteed, affording the investor the opportunity to cash-out at his convenience with more than handsome capital gains. This will become even more relevant once the last round of SASPRO token sales is completed in early 2023 when no further SASPRO tokens will be available ever again because, due to the nature of the Blockchain technology no further Tokens can be issued, unlike in companies where directors can simply issue more shares.



## 5 COMPETATIVE ENVIRONMENT ANALYSIS

### **An opportunity without competitors**

The only similar concept of acquiring a solar system on a “pay to own” basis available in South Africa is for businesses. However, financing of these systems is through normal bank finance.

The disadvantages of this is obvious;

- a) It excludes the home owner
- b) It excludes start-up businesses who obviously haven't got a proven operational or credit track record
- c) The cost of repayment of the loan including interest results in benefits only accruing after year 5 to year 7.
- d) Adding the finance charges to the initial cost of the solar system, more than doubles the cost of the system.

A market survey conducted revealed that, on average, only 1 in every 5 applications for financing of solar systems, is approved by the formal financial sector.

A SASPRO solar system means;

- e) Cost savings commence on day one.
- f) No interest.
- g) Immediate increase in property value.
- h) No credit checks.
- i) No impact on your credit record.
- j) No hidden costs or charges





## 6 RISK MITIGATION

### USING TECHNOLOGY TO MITIGATE RISK

Business, by nature, involves risk. However, the Fourth Industrial Revolution technologies used by the SASPRO Project, enables the mitigation of almost all identified risk factors, the most important of which are;

#### RISK

Non-payment of rental charge due by customer.

#### MITIGATION

This is a significant risk. Should customers not pay for the electricity supplied by the installed solar system, it may negatively impact on SASPRO's obligations towards its Investors. By utilizing Smart Contracts programmed on the SASPRO blockchain to communicate with IoT smart devices installed on the Solar System, it enables these smart devices to automatically de-activate the electricity supply 72 hours after payment has fallen in arrears. Upon receipt of payment, the Smart Contract notifies the IoT smart device and the Customer's Solar system is re-activated. Should a customer remain in arrears for 7 days, the Smart Contract notifies the support contractor who will remove the Solar system's inverter. If the customer still remains in arrears for a further 7 days, the support contractor is instructed to remove the installation. Systems removed shall not be re-installed at the same address but will be on-sold to new customers together with all loyalty points accumulated by the defaulting customer.

#### RISK

Property of customer is repossessed by the Financial Institution, alternatively attached by creditors of the customer due to his/her default on the mortgage/loan agreement



## MITIGATION

This poses a significant risk to investors since the installed solar systems serves as security for the investment. This risk is mitigated because the title deed of every property where an installation is done will be endorsed to the effect that the Solar system installed is the property of SASPRO and does not constitute a fixture or fitting. The effect of this is that SASPRO shall either be entitled to remove the Solar installation in which instance it will be on-sold to a new customer together with all accumulated loyalty points, alternatively, that the new buyer of the property takes transfer of the existing.

## RISK

The Solar installation is damaged by an event or action which is not covered by the factory guarantee.

## MITIGATION

SASPRO will insure all installations comprehensively with a reputable insurance company.

## RISK

Customer sells the property without notifying SASPRO/sells property and remove system

## MITIGATION

As long as rental payments are received there exist no risk for the investor. Should the Customer attempt to remove the Solar system, the IOT smart device installed as part of the Solar system will notify the SASPRO system that the Solar system is being tampered with. Automatic notification will be send by the Smart Contract to the Support contractor for immediate investigation.

## RISK

Solar System malfunction



## MITIGATION

The IoT smart device continuously monitor system performance and communicate any malfunction (system failure or under-performance) to the Smart Contract. The Smart Contract sends a notification to The Support Contractor who is contractually compelled to respond within twenty-four (24) hours. If electricity supply is interrupted the customer switches back to municipal supply.

## GENERAL MITIGATION OF INVESTORS' RISK.

Understanding the necessity to protect the interests of its investors the project will, for insofar it involves receiving funds from investors, comply with all the regulations prescribed by the South African legal and regulatory framework pertaining to investments and investors. The SASPRO Project is compliant with all these regulations.

However, the team has decided to take the protection of Investors one step further and will provide and publish each and every quarter, a certificate issued by an independent registered chartered accountant certifying;

- i) The number of tokens sold.
- ii) The number of solar systems installed on a “use to own” basis
- iii) Compliance of the Token Issuer with its interest obligations to investors for the preceding quarter.
- iv) Compliance during the preceding quarter of the Token Issuer with the Capital Investment buy-back program.
- v) Express an opinion on the Token issuer’s ability to meet its obligation with regard interest and Capital Redemption program for the following twelve (12) months.



## 6 THE TECHNOLOGY

### TOKENIZING THE REAL-WORLD ECONOMY STEP BY STEP - THE HEART OF THE FOURTH INDUSTRIAL REVOLUTION

***“The internet is the nervous system of the global economy through which nerve impulses are transmitted in the form of huge amounts of digital data, thus forming mankind’s collective knowledge. If we look at mankind as a single system that recreates the functions of a living organism, then Blockchain and its collective security approach can be perceived as one of the most vital components – an immune system that protects this organism against internal and external threats.”*** Robert Pothier, CEO Faceter

#### DISTRIBUTED LEDGER TECHNOLOGY

For the benefit of customers and first-time investors, we include here below a summarized overview of both the Distributed Ledger Technology (DLT/Blockchain) which will form the basis of the project as well as the concept of the Tokenization of the real-world economy as an investment vehicle for investors and as a source of venture capital. It provides a glimpse of the economy of the Fourth Industrial Revolution that is unfolding around all of us.

#### Background to DLT and the Tokenization of the Economy

1. Distributed Ledger Technology.

Distributed ledgers, also referred to as the Blockchain, use independent computers (referred to as nodes) to record, share and synchronize transactions in their respective electronic ledgers (instead of keeping data centralized as in a traditional ledger). Blockchain organizes data into blocks, which are chained together in an append only mode. DLT/Blockchain is the building block of the “internet of value,” and enable recording of interactions and transfer of “value” peer-to-peer, without a need for a centrally coordinating entity like a bank or Financial Institution in the case of money or lawyers and notaries in the instance of Real Estate. “Value” refers to any record of



ownership of asset -- for example, money, securities, land titles -- and ownership of specific information like identity, health information and other personal data.

Computing power and breakthroughs in cryptography, along with the discovery and use of some new and interesting algorithms, have allowed the creation of Distributed Ledgers. It is important to take note that this database or Distributed Ledger (Blockchain) is held and updated independently by each participant (or node) in a large network. The distribution is unique: records are not communicated to various nodes by a central authority but are instead independently constructed and held by every node (computer). That is, every single node or computer on the network processes every transaction, coming to its own conclusions and then voting on those conclusions to make certain the majority agree with the conclusions. Once there is this consensus, the distributed ledger has been updated, and all nodes maintain their own identical copy of the ledger. This architecture allows for a new dexterity as a system of record that goes beyond being a simple database.

Distributed Ledger Technology (DLT) is fundamentally changing the global economy, making it more efficient, resilient and reliable. It will address persistent challenges in the financial sector and change the roles of financial sector stakeholders. It will also transform various other sectors of the economy as well, like manufacturing, supply chain management, investment, the way we sell properties, government financial management systems and clean/renewable energy to mention but a few.

Distributed Ledgers are a dynamic form of media and have properties and capabilities that go far beyond static paper-based ledgers. It enables us to formalize and secure new kinds of relationships in the digital world. The gist of these new kinds of relationships is that the cost of trust (heretofore provided by notaries, lawyers, auditors, banks, regulatory compliance officers, governments, etc.), is eliminated by the architecture and qualities of distributed ledgers. The Wikipedia analogy of "What is Blockchain Technology?", hints at the power of these new kinds of relationships.



The invention of distributed ledgers represents a revolution in how information is gathered and communicated. It applies to both static data (a registry), and dynamic data (transactions). Distributed ledgers allow users to move beyond the simple custodianship of a database and divert energy to how we use, manipulate and extract value from databases — less about maintaining a database, more about managing a system of record.

### Establish digital identity

The identity component of DLT is fulfilled using cryptographic keys. Combining a public and private key creates a strong digital identity reference based on possession. A public key is how you are identified in the crowd (like an email address), a private key is how you express consent to digital interactions. Cryptography is a key element and important force behind the blockchain revolution.



### Serve as a system of record

Blockchains are an innovation in information, registration and distribution. They are good for recording both static data (a registry) or dynamic data (transactions), making it an evolution in systems of record. In the case of a registry, data can be stored on blockchains in any combination of three ways:

- i) **Unencrypted data** – can be read by every blockchain participant in the blockchain and is fully transparent.
- ii) **Encrypted data** – can be read by participants with a decryption key. The key provides access to the data on the blockchain and can prove who added the data and when it was added.



- iii) **Hashed data** – can be presented alongside the function that created it to prove the data wasn't tampered with.

Blockchain hashes are generally done in combination with the original data stored off-chain. Digital 'fingerprints', for example, are often hashed into the blockchain, while the main body of information can be stored offline. Such a shared system of record can change the way unrelated organizations work together. Currently, with data stored in private servers, there is an enormous cost for inter-company or peer-to-peer transactions involving processes, procedures and cross-checking of records. All these costs are eliminated when using DLT. But even more;

### **Prove immutability**

A feature of a blockchain database is that it has a history of itself. Because of this, they are called immutable. Put differently, it is almost impossible to change an entry in the database because of the huge effort it will take to do so. Changing any specific historic entry, would require changing all the data that comes afterwards, on every single node (computer) on all of the network. In this way, it is more a system of record than a database.

### **Serve as a platform**

Cryptocurrencies were the first platform developed using blockchain technology. Now, people have moved from the idea of a platform to exchange cryptocurrencies to a platform for smart contracts. The term '**Smart Contracts**' has become somewhat of a catch-all phrase, but the idea can actually be divided into several categories:

- i) There are the **Smart Contracts** where machines engage after receiving an external input (a cryptocurrency) or receiving a signal that triggers a blockchain activity.
- ii) Then there are **Smart Legal Contracts**, or Ricardian contracts. Much of this application is based on the idea that a contract is a meeting of the minds, and that it is the result of whatever the consenting parties to the contract agree to. So, a contract can be a mix of a verbal agreement, a written agreement, and now also some of the useful aspects of blockchains like timestamps, tokens, auditing, document coordination and business logic.



- iii) Finally, there are the **Ethereum-type Smart Contracts**. SASPRO makes use of mostly these contracts. These are programs which control blockchain assets, executed over interactions on the Ethereum blockchain. Ethereum itself is a platform for smart contract code. There are already a number of networks that use these kinds of **Smart Contracts**

Blockchains are not built using a technology. They are built from a unique orchestration of three existing technologies;

- i) Private Key Cryptography
- ii) Peer-to-Peer network
- iii) The Protocol (computer program)

### **Tokenizing the Economy.**

1. What is tokenization?

Tokenization is best explained in the context of new business applications that have already emerged

- **Smart Contracts**

Distributed ledgers enable the coding of simple contracts that will execute when specified conditions are met. Ethereum, Tron and Komodo are just 3 examples of open source blockchain projects that were built specifically to realize this possibility. Still in its early stages, these projects have the potential to leverage the usefulness of blockchains on a truly world-changing scale. At the technology's current level of development, Smart Contracts can be programmed to perform simple functions eliminating the need for personnel to perform these functions. For instance, a derivative could be paid out when a financial instrument meets a certain benchmark, with the use of blockchain technology and a cryptocurrency enabling the payout to be automated, something that is currently done mostly by lawyers at enormous cost. GOODBYE COUNSELOR .....

- The sharing economy





With companies like Uber and Airbnb flourishing, the sharing economy is already a proven success. Currently, however, users who want to hail a ride-sharing service must rely on an intermediary like Uber. By enabling peer-to-peer payments, the blockchain opens the door to direct interaction between parties — a truly decentralized sharing economy results. An early example, OpenBazaar uses the blockchain to create a peer-to-peer eBay. Download the app onto your computing device, and you can transact with OpenBazaar vendors without paying transaction fees. The “no rules” ethos of the protocol means that personal reputation is even more important to business interactions than it currently is on eBay.

- Crowdfunding

Crowdfunding initiatives like Kickstarter and Gofundme are doing the advance work for the emerging peer-to-peer economy. The popularity of these sites suggests people want to have a direct say in product development. Blockchains take this interest to the next level, potentially creating crowd-sourced venture capital funds. In 2016, one such experiment, the Ethereum-based DAO (Decentralized Autonomous Organization), raised an astonishing \$200 million in just over two months. Participants purchased “DAO tokens” allowing them to vote on Smart Contract venture capital investments (voting power was proportionate to the number of DAO Tokens a voter was holding). The DAO Token experiment suggests the blockchain has the potential to usher in a whole new paradigm of economic cooperation.

- Governance

By making the results fully transparent and publicly accessible, Distributed Ledger Technology is able to bring full transparency to elections or any other kind of poll taking. Ethereum-based Smart Contracts help to automate the process. The app, Boardroom, enables organizational decision-making to happen on the blockchain. In practice, this means company governance becomes fully transparent and verifiable when managing digital assets, equity or information.

- Supply chain auditing



Consumers increasingly want to know that the ethical claims companies make about their products are real. Distributed ledgers provide an easy way to certify that the backstories of the things we buy are genuine. Transparency comes with blockchain-based timestamping of a date and location — on ethical diamonds, for instance — that corresponds to a product number. The UK-based Provenance offers supply chain auditing for a range of consumer goods. Making use of the Ethereum blockchain, a Provenance pilot project ensures that fish sold in Sushi restaurants in Japan has been sustainably harvested by its suppliers in Indonesia.

- File storage

Decentralizing file storage on the internet brings clear benefits. Distributing data throughout the network protects files from getting hacked or lost. Inter Planetary File System (IPFS) makes it easy to conceptualize how a distributed web might operate. Like the way a bittorrent moves data around the internet, IPFS gets rid of the need for centralized client-server relationships (i.e., the current web). An internet made up of completely decentralized websites on a network of computers, has the potential to speed up file transfer and streaming times. Such an improvement is not only convenient. It's a necessary upgrade to the web's currently overloaded content-delivery systems.

- Prediction markets

The crowdsourcing of predictions on event probability is proven to have a high degree of accuracy. Averaging opinions eliminates the unexamined biases that distort judgment. Prediction markets that pay according to event outcomes are already active. Blockchains are a “wisdom of the crowd” technology that will no doubt find other applications in the years to come. The prediction market application Augur makes share offerings on the outcome of real-world events. Participants can earn money by buying into the correct prediction. The more shares purchased in the correct outcome, the higher the payout will be. With a small commitment of funds (less than a dollar), anyone



can ask a question, create a market based on a predicted outcome, and collect half of all transaction fees the market generates.

- Protection of intellectual property

As is well known, digital information can be infinitely reproduced — and distributed widely thanks to the internet. This has given web users globally a goldmine of free content. However, copyright holders have not been so lucky, losing control over their intellectual property and suffering financially as a result. Smart Contracts can protect copyright and automate the sale of creative works online, eliminating the risk of file copying and redistribution. Mycelia uses the blockchain to create a peer-to-peer music distribution system. Founded by the UK singer-songwriter Imogen Heap, Mycelia enables musicians to sell songs directly to audiences, as well as license samples to producers and divvy up royalties to songwriters and musicians — all these functions being automated by Smart Contracts. The capacity of blockchains to issue payments in fractional cryptocurrency amounts (micropayments) suggests this use case for the blockchain has a strong chance of success.

- Internet of Things (IoT)

What is the IoT? The network-controlled management of certain types of electronic devices — for instance, the monitoring of security devices in your home. Smart Contracts make the automation of remote systems management possible. A combination of software, sensors, smart devices and the network, facilitates an exchange of data between objects and mechanisms. The result increases system efficiency and improves the cost of monitoring. The biggest players in manufacturing, tech and telecommunications are all vying for IoT dominance. Think Microsoft, Google, Samsung, IBM and AT&T. A natural extension of existing infrastructure controlled by incumbents, IoT applications will run the gamut from predictive maintenance of mechanical parts to data analytics, and mass-scale automated systems management.

- Identity management



The ability to verify your identity is the lynchpin of financial transactions that happen online. However, remedies for the security risks that come with web commerce are imperfect at best. Distributed ledgers offer enhanced methods for proving who you are, along with the possibility to digitize and encrypt personal documents. Having a secure identity will also be important for online interactions — for instance, in the sharing economy. A good reputation, after all, is the most important condition for conducting transactions online.

Developing digital identity standards is proving to be a highly complex process. Technical challenges aside, a universal online identity solution requires cooperation between private entities and governments. Add to that the need to navigate legal systems in different countries and the problem becomes exponentially more difficult. E-Commerce on the internet currently relies on the SSL certificate (the little green lock) for secure transactions on the web. Netki is a startup that aspires to create an SSL standard for the blockchain. Having recently announced a \$3.5 million seed round through an ICO, Netki expects a product launch in early 2019.

- AML and KYC

Anti-money laundering (AML) and know your customer (KYC) practices have a strong potential for being adapted to the blockchain. Currently, financial institutions must perform a labor-intensive multi-step process for each new customer. KYC costs could be reduced through cross-institution client verification, and at the same time increase monitoring and analysis effectiveness. Startup Polycoin has an AML/KYC solution that involves analysing transactions. Those transactions identified as being suspicious are forwarded on to compliance officers. Another startup Tradle is developing an application called Trust in Motion (TiM). Characterized as an “Instagram for KYC”, TiM allows customers to take a snapshot of key documents (passport, utility bill, etc.). Once verified by the bank, this data is cryptographically stored on the blockchain.

- Data management



Today, in exchange for their personal data, people can use social media platforms like Facebook for free. Blockchain enables individual users to manage and sell the data their online activity generates. Because it can be easily distributed in small fractional amounts, Bitcoin — or something similar — will most likely be the currency that gets used for this type of transaction. The Massachusetts Institute of Technology (MIT) project Enigma understands that user privacy is the key precondition for the creation of a personal data marketplace. Enigma uses cryptographic techniques to allow individual data sets to be split between nodes, and at the same time run bulk computations over the data group. Fragmenting the data also makes Enigma scalable (unlike those blockchain solutions where data gets replicated on every node). A Beta launch is promised within the next six months. Brave Browser (Bat) is an internet browser platform which enables users to be paid for content posted on sites.

- Land title registration

As Publicly-accessible ledgers, blockchains can make all kinds of record-keeping more efficient. Property titles are a case in point. They tend to be susceptible to fraud, as well as costly and labor-intensive administration. Several countries are undertaking blockchain-based land registry projects. Honduras was the first government to announce such an initiative in 2015, although the current status of that project is unclear, the latest information indicates that it will be implemented towards the end of 2019. In 2018, the Republic of Georgia cemented a deal with the Bitfury Group to develop a blockchain system for property titles. Reportedly, Hernando de Soto, the high-profile economist and property rights advocate, will be advising on the project. Most recently, Sweden also announced it was experimenting with a blockchain application for property titles.

- Stock trading

The potential for added efficiency in share settlement makes a strong use case for blockchains in stock trading. When executed peer-to-peer, trade confirmations become almost instantaneous (as opposed to taking three to five days for clearance). Potentially,



this means intermediaries — such as the clearing house, auditors, lawyers and custodians — get removed from the process. Numerous stock and commodities exchanges are prototyping blockchain applications for the services they offer, including the ASX (Australian Securities Exchange), the Deutsche Börse (Frankfurt's stock exchange) and the JPX (Japan Exchange Group). Most high profile because the acknowledged first mover in the area, is the Nasdaq's Linq, a platform for private market trading (typically between pre-IPO startups and investors). In a partnership with the blockchain tech company Chain, Linq announced the completion of its first share trade in 2018. More recently, Nasdaq announced the development of a trial blockchain project for proxy voting on the Estonian Stock Market.

#### TOKENIZATION OF THE REAL-WORLD ECONOMY

Much has been said about the potential of blockchain in reducing the frictions in value transfers through the removal of middlemen. A more profound application of blockchain, however, has emerged. It is the tokenization of the real economy.

Blockchain is called the Internet of Value. Various digital currencies exist on top of the blockchain. These digital currencies, or tokens, can be used to represent ownership over real-world objects and properties outside of the blockchain. This is what is meant by tokenization of property and the real economy. Tokenization is revolutionizing the real economy. On the one hand, it enhances the liquidity and transparency of large-value properties, such as prime real estate, famous art works, precious metals and stones, right down to solar farms and installations. Owners of these properties can also obtain funding through partial tokenization of their assets. On the other hand, it democratizes access to these investment opportunities that are traditionally available only to high net-worth investors. It provides for fractional ownership of these assets and diversification across almost all asset classes.

Tokenization of assets is done by issuing Security Tokens to investors by way of an STO or Security Token Offering on a blockchain. Here is a perfect example.



Asset management firm Elevated Returns, the owner of the top end ski resort, St. Regis, Aspen, on Tuesday 9<sup>th</sup> October 2018, announced that investors had purchased all \$18 million worth of Aspen Tokens made available through the first Security Token Offering (STO), bringing to a successful conclusion, the sale of the resort.

Manhattan's first major asset to be tokenized on the blockchain is a luxury condo development, recently valued at \$30 million. The East Village building contains 12 condos, each with 1700 square feet of space and each now tokenized on the Ethereum blockchain. The real estate property is now represented with a sum of tokens available for purchase on the blockchain. A token represents a portion of the value of the property, allowing people to invest in luxury condos even with a small investment of as little as \$100, something which was previously simply impossible. Bestselling author Ryan Serhant brokered the deal and favors tokenization as a viable modern financing method. Speaking to Forbes, Serhant said: *"The market in New York is always strong, but it can take quite some time to sell for the right price in a new construction building. With blockchain tokenization, we can remove the unruly pressure of traditional bank financing, which is much healthier for both the project and all the stakeholders. Tokenization is paving the way for a new forefront in real estate development. Going to the market with a landmark deal allows us to make a statement—that this technology is now real. With the right partners and an optimized structure, we are bringing a major real-world asset online"*





### Tokenizing Everything

Real estate tokenization has been on the horizon for some time, and the tokenization of the Manhattan luxury condo complex as well as the Aspen Ski Resort, is a major step in seeing that use case realized. Tokenization can be applied to almost every other asset class to increase liquidity and provide investment opportunities for smaller investors, thereby revolutionizing the investment industry.

In 2014, Visa CEO Charles Schaff stated the case for asset tokenization. Four years later, there are companies like **ArtPro**, which allows investors to purchase a sum of tokens representing an investment in classic and modern art pieces, whereas other projects like **Inveniam** are tokenizing global debt markets for investors to buy into. **Binance** recently led a \$12 million funding round in tokenization startup **Republic** which aims to identify other tokenization investment opportunities as the list of use cases in asset tokenization continues to grow, providing new investment opportunities to the world through Distributed Ledger Technology.

### SASPRO, DITRUBUTED TECHNOLOGY AND TOKENIZATION

The SASPRO systems, both on the investment side and customer (installed Solar systems) will run on the blockchain and will be managed by **Smart Contracts**.

On the Investor side the record of investment with all details of the Investor, amount invested, date invested, interest paid, and principal repayments will be stored on the Blockchain and will be accessible at all times. SASPRO as well as the investor will hold the public key (Wallet





Address) but all private keys will be transferred to the Investor. The **Smart Contract** will automatically calculate and trigger interest payments on due date. The same applies to the Principal buy-back.

On the Customer side, the Solar systems will be installed with IoT smart devices that will;

- i) Continuously monitor system performance and will communicate mal-performance to the SASPRO blockchain. The **Smart Contract** will report the malfunction to the Support Contactor responsible for the installation who will be contractually obliged to respond within 24 hours, establish the reason for the malfunction and take the necessary actions to restore full functionality.
- ii) The IoT smart device will monitor the installation for tampering, will communicate possible instances of tampering to the SASPRO blockchain where the **Smart Contract** will report the possible instance of tampering to the Support Contractor who will be contractually obliged to investigate within 2 hours.
- iii) The **Smart Contract** will monitor rental payments and are programmed to communicate with the IoT smart device on the installed system 72 hours after the payment was due but unpaid. The IoT smart device will disconnect power supply.
- iv) The Smart Contract will track the terms of the Rental agreements and will notify the administrator 1 month prior to the contract termination date. The administrator will then instruct the SASPRO Lawyers to cancel the endorsement on the home owners title deed thereby effecting transfer of ownership of the system to the home owner.

Utilizing IoT smart devices and **Smart Contracts** enables SASPRO to minimize staff requirements, office expenses and general overheads to a budgeted 10% of turnover, thereby maximizing profitability.

#### BENEFIT OF TOKENIZING THE SASPRO PROJECT

Tokenizing the SASPRO project has numerous advantages over using the established channels for raising capital. Without specific reference to any order of importance of these benefits we list some of those advantages;



- i) Tokenizing the project enables small investors to partake in an investment opportunity that under normal circumstances would be exclusively available to high net-worth individuals.
- ii) Tokenization reduce the cost of raising capital to levels previously thought to be impossible. By circumventing the numerous professionals required to successfully raising capital in the traditional markets ensure that 90% of capital raised ends up being used for the purpose for which the capital is raised. This compares to less than 70 % when using traditional channels of raising capital.
- iii) Tokenization allows the investor the option of receiving the proceeds generated by his investment in the currency of his choice, be it any of numerous cryptocurrencies or a variety of fiat currencies ranging from US Dollar, British pound to Euro, Japanese Yen or Australian Dollar. This is so because the blockchain doesn't recognize borders. This benefit by and large protects the investor against exchange rate fluctuations in times of high volatility.
- iv) The decentralized nature of blockchain technology provides the investor with real impact and influence over the management of the project irrespective of the size of his/her investment.
- v) Tokenization of the project enables the investor to liquidate his investment literally within minutes if needs be at almost zero cost – no commissions, no brokerage fees and little to no transaction costs. The investor is, without the assistance of intermediaries, able to determine the real-time value of his/her investment 24/7.
- vi) Because of the borderless nature of the blockchain technology the investor has a global market on which to trade his investment should he/she so wishes.

### The real-world use case for the SASPRO Token

Customers who have entered into a “use to own” agreement with the project will be required to pay the monthly electricity usage charge in SASPRO Tokens. This will have no effect on the monthly electricity charge since the customer will be required to buy SASPRO Tokens for the



amount equal to his monthly electricity charge which is calculated in fiat currency but payable in SASPRO tokens. If the SASPRO Token increase in value, the customer will require fewer tokens to pay his monthly electricity charge and vice versa. However, since there will never be more than 21 million SASPRO Tokens it stands to reason that, as the number of installed Solar systems increases, the demand for these Tokens will increase and hence the effect on the value of the Tokens will be positive. The SASPRO Token will be Proof of Stake based running on master nodes.

#### FURURE DEVELOPMENT

The problems of electrification of private dwellings and small and medium enterprises is not isolated to South Africa alone but is indeed an African Continent-wide problem. Once the SASPRO project has stabilized in the South African environment which is anticipated to be within the first three to four years, the project will be rolled out to the rest of Africa on a country by country basis albeit with great circumspection and only if the majority of investors support such roll out.

With a global economy that is rapidly becoming internet based and digitized, the majority of Africans are and will be excluded from that economy unless they urgently gain access to home-based electricity. In the absence of such a project of mass electrification, poverty on the African continent will remain a growing phenomenon.

SASPRO provides an answer to this Continent-wide problem and will contribute to an increased participation by the African people in the global economy, development of the Continent's economies and the eradication of the plague of poverty and illiteracy.



## 8 PRE-LAUNCH TOKEN SALE

**20% discount**

**Great opportunity to get in on the ground**

### PRE – LAUNCH TOKEN SALE

A pre-launch token sale will commence on 6 MARCH 2019. A total of one million (1,000,000) SASPRO Tokens will be made available for sale in the pre-launch sale at a discount of twenty percent of the nominal value of SASPRO Tokens of USD 1 (\$1). Details of the process to partake in the pre-launch sale is available on the SASPRO website at **WWW.SASPRO.ORG**

This provide investors that enter on the ground level of the project to earn an effective 15% per annum return on their investment for the next twelve (12) years. The pre-launch SASPRO Tokens will be subject to the same terms and conditions applicable to all SASPRO Tokens sold during the remaining 4 phases and interest payment shall commence on the effective date. The proceeds of the pre-launch sale shall be used to bring the project on-line including but not limited to;

- a) Expenses related to the further development of the SASPRO Blockchain.
- b) Expenses related to the listing of the SASPRO Token on at least three (3) Exchanges
- c) Expenses related to the launch, marketing and advertising of solar systems to home owners and SMME's
- d) Expenses related to regulatory requirements as set out in the South African Legal framework.